



WEST VIRGINIA DRUG OVERDOSE DEATHS HISTORICAL OVERVIEW 2001-2015

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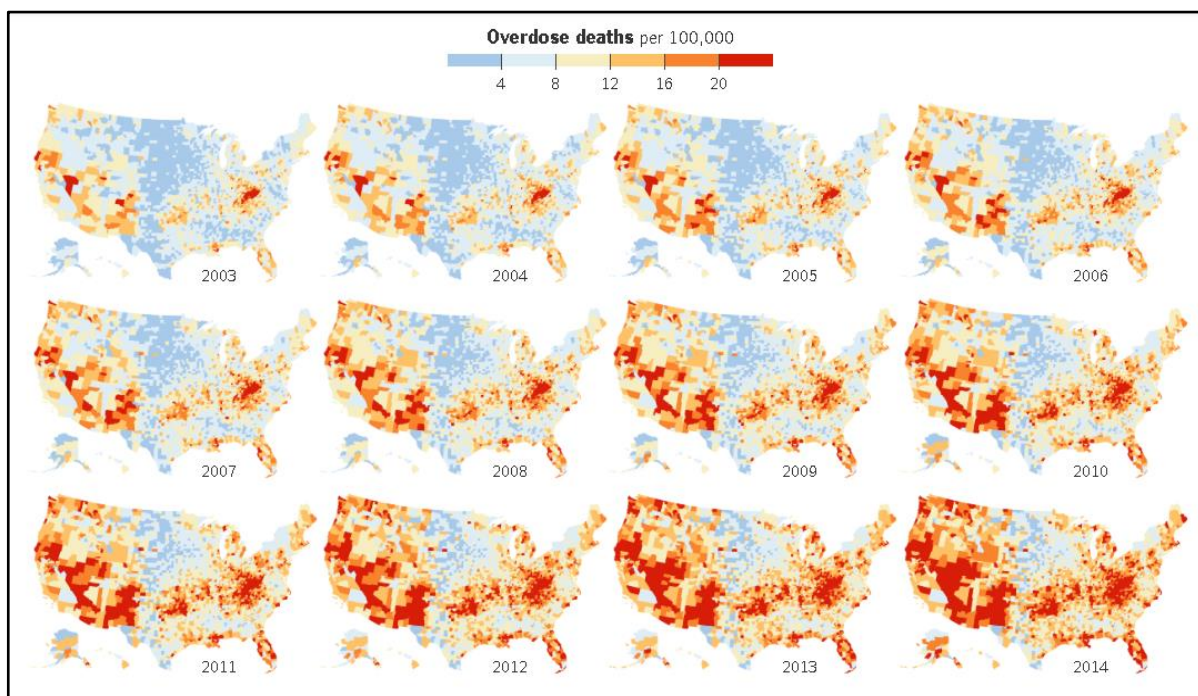
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West Virginia Drug Overdose Deaths (2001-2015)

On December 8, 2016, the Centers for Disease Control and Prevention (CDC) reported in the *Washington Post* that heroin deaths surpassed gun homicides for the first time. (CDC WONDER www.washingtonpost.com/news/wonk/wp/2016/12/08/heroin-deaths-surpass-gun-homicides-for-the-first-time-cdc-data-show/?utm_term=.66ead0bf4c19) As recently as 2007, gun homicides outnumbered heroin deaths by more than 5 to 1. Opioid deaths continued to surge nationally in 2015, surpassing 30,000 for the first time. In 2015, there were 5,000 opioid deaths attributed to powerful synthetic opiates (fentanyl) creating an increase of 75% from 2014. Heroin deaths also spiked, rising more than 2,000 cases. For the first time since the late 1990s, there were more deaths due to heroin than traditional opioid painkillers, i.e. hydrocodone and oxycodone. Former CDC Director Dr. Tom Frieden stated, "Prescription opioid misuse and use of heroin and illicitly manufactured fentanyl are intertwined and deeply troubling problems. The epidemic of deaths involving opioids continues to worsen."

Figure 1 demonstrates the public health epidemic of drug overdose deaths across America.

Figure 1: How the Epidemic of Drug Overdose Deaths Rippled Across America



Source: New York Times (January 19, 2016)

In 2016, the U.S. Surgeon General released a report, "Facing Addiction in America," to address substance use problems in the United States and to help inform policy makers, healthcare professionals, and the general public about ways to reduce substance misuse and related problems. Strategies for early intervention will be needed to improve the availability of treatment. A public health model addressing substance misuse was available in this report for working towards a healthy community. The U.S. Surgeon General's report also discussed substances including alcohol, illicit drugs (prescription drugs used for nonmedical purposes) and over-the-counter-drugs (www.addiction.surgeongeneral.gov/surgeon-generals-report.pdf).

A public health epidemic of opioid drug overdoses has been worsening in the United States since the 1990s (www.cdc.gov/mmwr/preview/mmwrhtml/mm6043a4.htm). In 2014, opioids were involved in greater than 60% of overdose deaths and more Americans died of drug overdoses than in any previous year. The proportion of overdose deaths due to opioids is increasing with the largest percentage increases due to heroin and synthetic opioids, especially fentanyl. West Virginia had the highest overdose death rate of any state in 2013 and 2014 with the rate increasing 10.2% in that interval. However, the public health impact of non-fatal overdose deaths has not been widely studied. (www.cdc.gov/mmwr/preview/mmwrhtml/mm6450a3.htm)

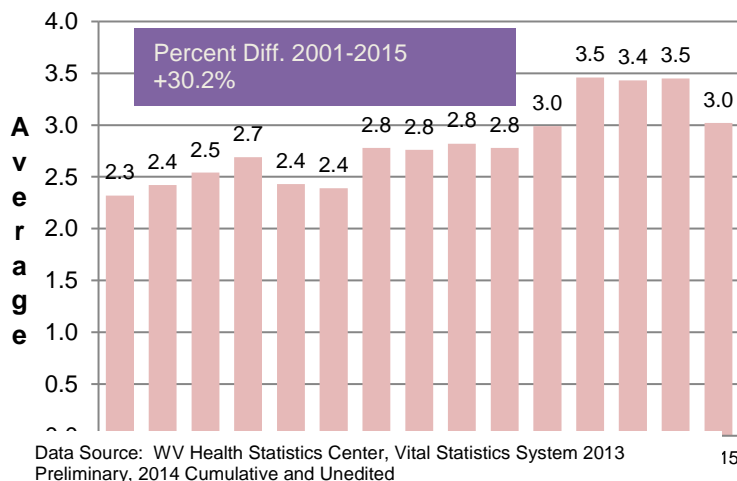
Due to the fact that most drug overdose deaths involved multiple substances (polypharmacy), each individual death usually involved multiple types of drugs. Thus, the West Virginia Health Statistics Center (HSC) prepared a review of each overdose death occurring in West Virginia according to available toxicology results. In 2001, there was an average of 2.32 drugs involved in each overdose death occurring in West Virginia. The HSC's last review of data was in 2015 (Figure 2) and indicated approximately 3.5 drugs were involved in each fatal overdose. Figure 2 displays an overall increase of 48.7% or an average increase of 3.5% per year occurring from 2001 through 2015.

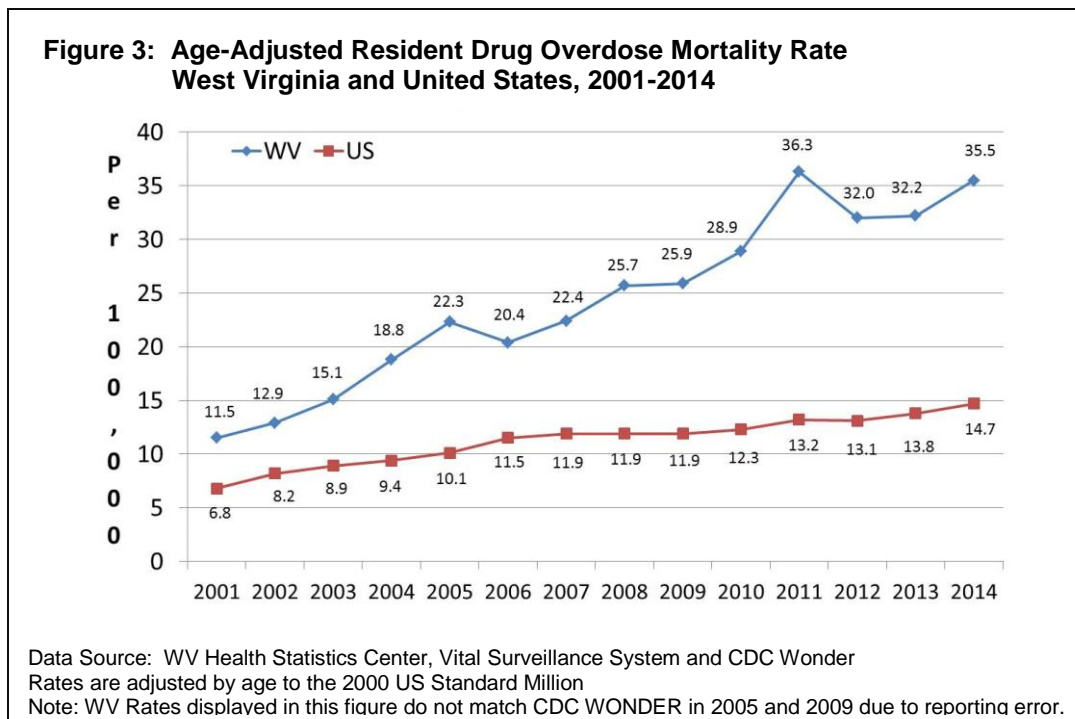
The HSC made 15 years of data (2001-2015) available for review on October 14, 2016, and five years of race/ethnicity data on November 18, 2016, that reported the demographics of 7,207 drug overdose deaths in West

Virginia (Figure 3). Since there were multiple occurrences of different drugs related to these trends, more detail about specific drug toxicology results will follow in this report. Prior to 2012, drug overdose deaths were predominately due to prescription drugs, such as methadone and oxycodone, being used for nonmedical purposes. Since 2013, the trend has shifted to selected opioids and injected heroin, some laced with fentanyl, carfentanil, and benzodiazepines.

West Virginia has been experiencing a public health epidemic of drug overdose deaths for more than a decade. Intentional and unintentional drug overdoses affect more densely populated areas of the state, as well as more rural southern areas. West Virginia drug overdose death rates compared to the United States are displayed in Figure 3. Since United States data are only available through 2015, the comparison in Figure 3 indicates the West Virginia resident drug overdose mortality rate of 35.5 is more than twice as high as the United States mortality rate of 14.7 per 100,000. West Virginia has the highest age-adjusted mortality rate in the nation and over a third higher than the next highest state, Kentucky. These rates in Figure 3 are adjusted by age to the 2000 U.S. Standard Million.

Figure 2: Average Number of Drugs Involved Per Fatal Overdose West Virginia Occurrences, 2001-2015



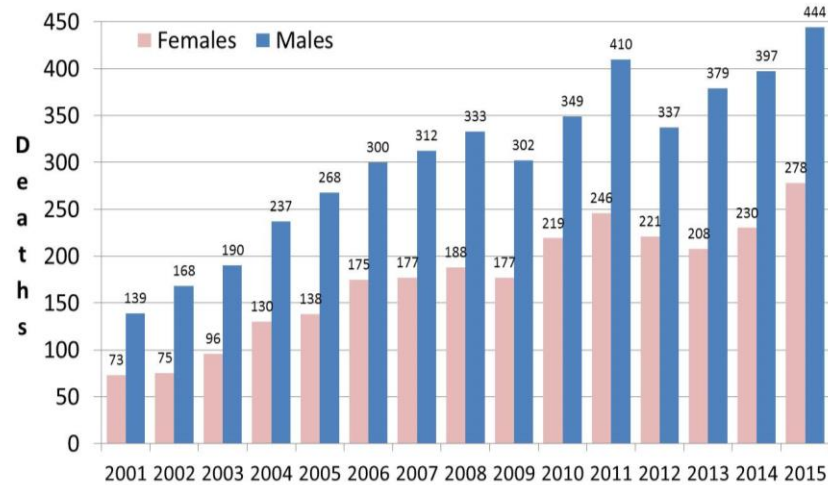


The information in this report was provided from multiple data sources available within the West Virginia Department of Health and Human Resources (WVDHHR). The interpretation of these resources will be displayed and discussed to fully characterize these data. Since 2001, the WVDHHR, Bureau for Public Health (BPH), HSC and Office of the Chief Medical Examiner (OCME) have maintained a collaboration of documenting drug-related overdose death data for each specific drug detected from toxicology results and recorded on death certificates. The data involved all manners of drug overdose deaths including accidents, suicides, homicides and those of undetermined intent. The death certificate data only includes deaths that occurred in West Virginia. Information regarding deaths to West Virginia residents that occurred in other states was not included. The 2015 data is preliminary and unedited; it may increase once all causes of death are known and coded. Other drug related overdose information was made available by the WVDHHR Bureau for Behavioral Health and Health Facilities (BBHf) in 2013 with the publication of a Substance Abuse Epidemiological Profile. This profile reported West Virginia rates for drug abuse and dependence as higher than the national average with an increase in the use of needles to inject any illegal drug and heroin (www.dhhr.wv.gov/bbhfr/resources). This profile also reported that West Virginia's unintentional drug overdose deaths were 31.8 per 100,000 population while the national rate was 12.3 per 100,000. The number one cause of drug overdose deaths was associated with opiates, making West Virginia number one in the nation.

The remainder of this drug overdose report will focus on 15 years of West Virginia data for the following drugs: cocaine, methamphetamines, and prescription-type medications that are used for nonmedical purposes, i.e., pain killers (synthetic, non-synthetic opioid medications, fentanyl, oxycodone, and hydrocodone, heroin, and gabapentin); tranquilizers, including benzodiazepines; alprazolam; stimulants; and methamphetamine including amphetamines.

In Figure 4, the pattern of drug overdose deaths across the last 15 years by gender documented more male deaths than female deaths among the 7,207 drug overdose deaths that occurred. From 2013 through 2015 there is a similar increasing three-year trend among both genders.

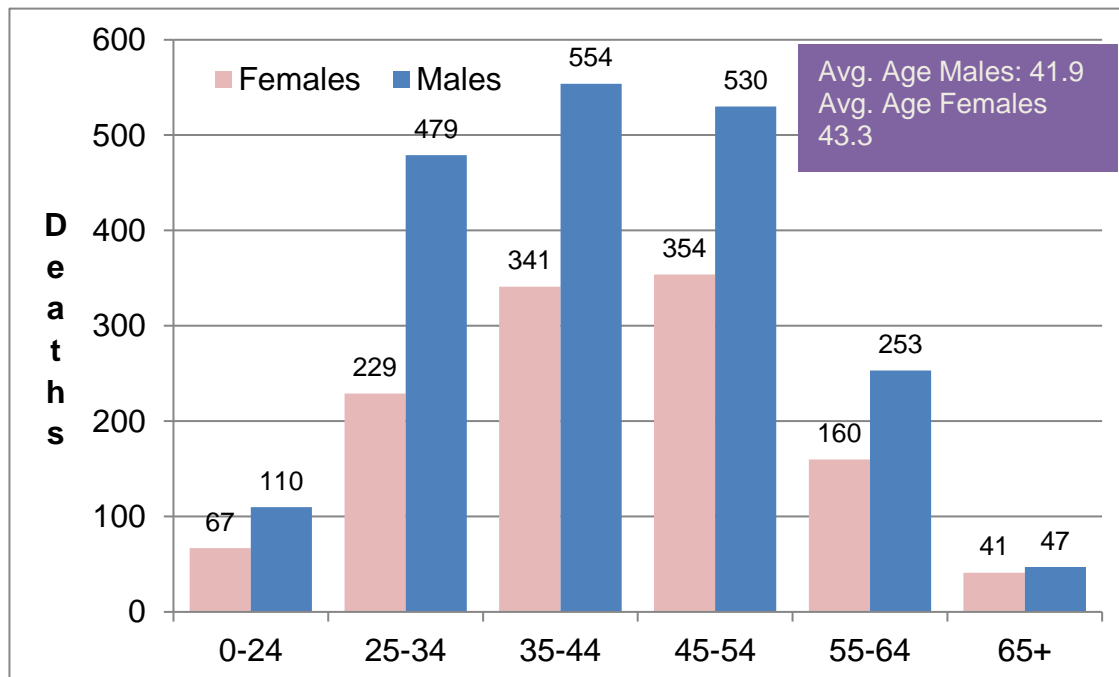
Figure 4: West Virginia Drug Overdose Deaths by Year & Gender 2001-2015 Occurrences (N=7,207)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

The pattern of many more drug overdoses among male deaths than female deaths holds true for all age ranges. In the 0-19 and 60+ age groups, drug overdose deaths were practically the same among males and females. The average age at death, for both men and women, was 42 years old. Most drug overdose deaths occurred in the 30-39 and 40-49 age ranges for both males and females (Figure 5).

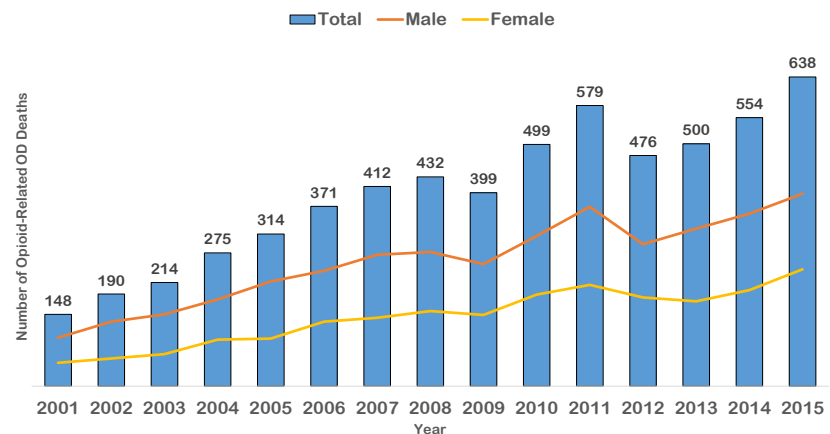
Figure 5: West Virginia Drug Overdose Deaths by Age-Group and Gender 2011-2015 Occurrences



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Opioids were detected in 6,001 drug overdose deaths in West Virginia from 2001 through 2015 (Figure 6). Over the last four years (2012-2015), an increasing trend was observed in Figure 6 with more overdose deaths among males than females.

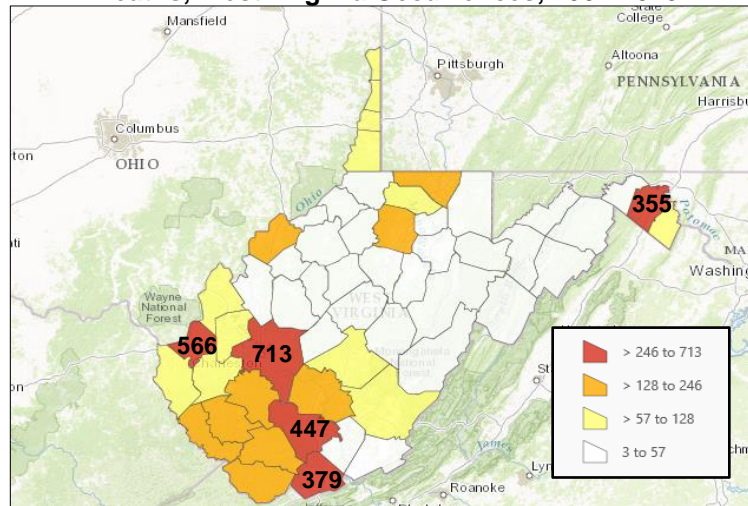
Figure 6: Opioid-Related Overdose Deaths, West Virginia Occurrences, 2001-2015 (N=6,001)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 7 maps the location of opioid overdose deaths by county of occurrence. The counties most impacted were Kanawha, Cabell, Raleigh, Mercer and Berkeley, accounting for 41% of reported opioid-related deaths (with at least one opioid per death) from 2001 through 2015. The cluster of deaths is concentrated in the southwestern part of the state, with exception of Berkeley County.

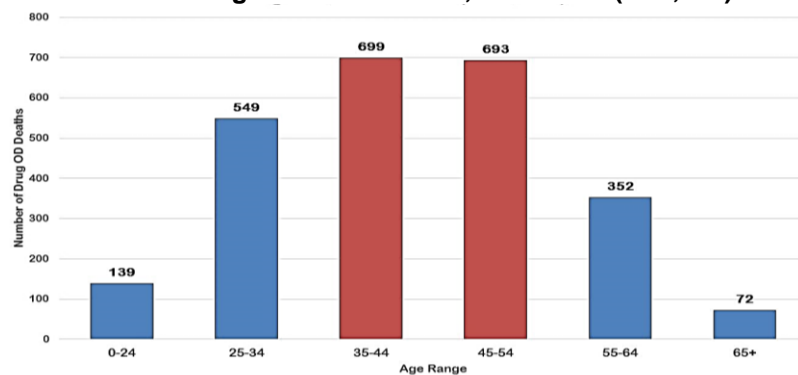
Figure 7: County-Level Distribution of Opioid-Related Overdose Deaths, West Virginia Occurrences, 2001-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 8 displays the total overdose deaths of 2,504 by age range from 2012 through 2015. The 35-44 and 45-54 age ranges are the most heavily impacted age ranges for these deaths that occurred from prescription opioid pain relievers.

Figure 8: Total Drug Overdose Deaths by Age Range West Virginia Occurrences, 2012-2015 (N=2,504)*



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Table 1 lists all of the opioids recorded on death certificates detected on toxicology results from 2001 through 2015. Table 1 includes a line item, “at least one opioid,” which combines three 5-year clusters (2001-2005; 2006-2010; and 2011-2015). A net increased occurrence of opioid deaths was noted in these three aggregate periods. This increasing trend detects the concern that opioid overdose deaths are increasing with time. Due to the fact that most drug overdose deaths involve multiple substances (polypharmacy), any individual death may involve multiple types of drugs. As such, overdose deaths presented that involve one particular drug are rarely mutually exclusive from other overdose deaths, e.g., a death that may be heroin-related may also be a death that is hydrocodone-related (or alprazolam-related, or oxycodone-related, etc.). Because of this, the cumulative total for the rows below for individual drugs will not equal the 6,001 deaths listed in the “Total” column for the “At least 1 Opioid” row.

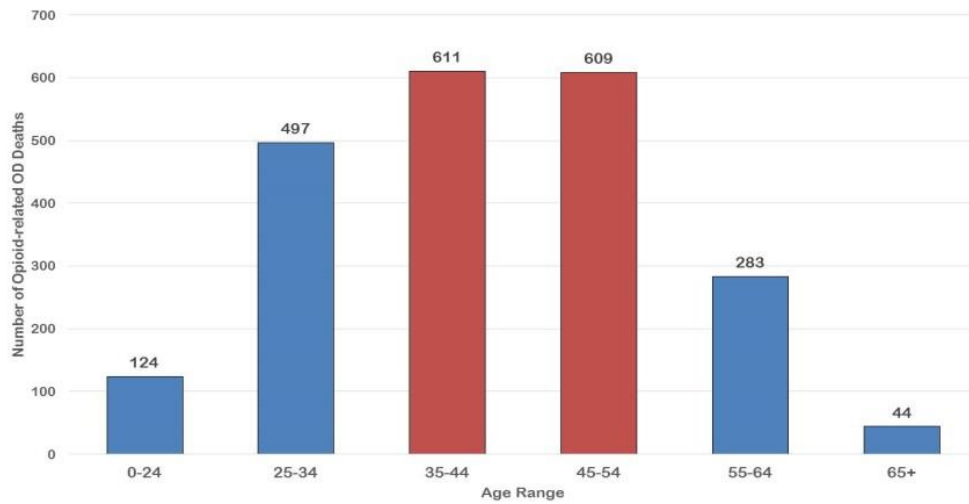
Table 1: Opioids Recorded on West Virginia Death Certificates, 2001-2015

Opioid	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Buprenorphine	0	0	0	0	0	0	0	5	5	12	15	32	30	34	31	164
Codeine	6	5	8	18	11	12	9	10	9	11	11	10	5	16	17	158
Fentanyl	9	17	36	46	54	39	60	57	49	44	51	32	40	55	180	769
Heroin	9	7	5	10	14	11	22	38	38	34	41	67	157	165	201	819
Hydrocodone	31	33	53	44	61	87	72	86	97	138	171	142	138	133	113	1399
Hydromorphone	1	1	0	5	2	4	6	7	11	6	14	9	12	11	8	97
Morphine	11	20	26	38	50	62	68	48	43	39	45	54	48	68	76	696
Methadone	39	83	71	116	120	141	109	95	78	83	61	65	55	39	32	1187
Oxycodone	39	49	45	47	58	82	112	140	141	223	224	182	200	200	182	1924
Oxymorphone	0	0	0	2	0	1	6	14	17	77	182	72	32	48	54	505
Propoxyphene	26	23	19	26	27	26	36	22	19	27	2	0	0	2	0	255
Tapentadol	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Tramadol	2	2	1	6	11	11	17	24	16	25	35	32	37	42	22	283
At least 1 Opioid	148	190	214	275	314	371	412	432	399	499	579	476	500	554	638	6,001

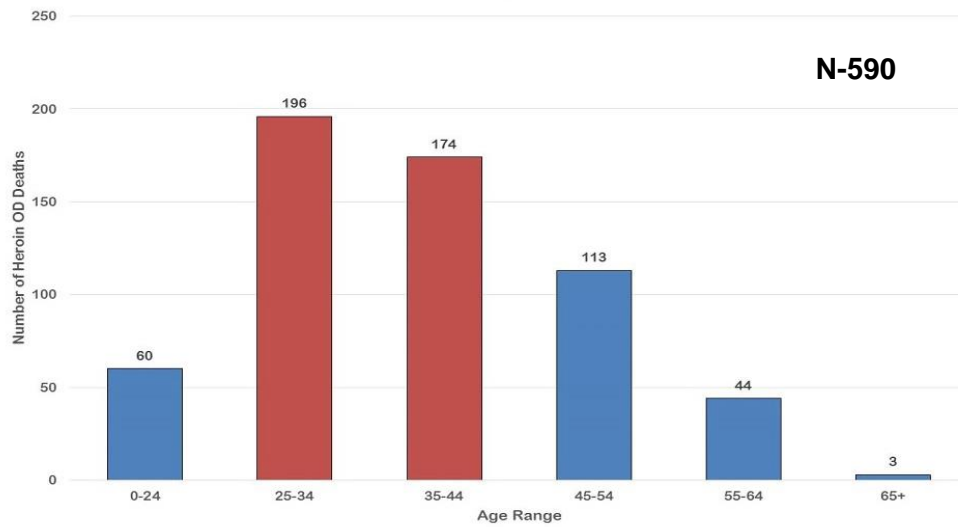
Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

The spike in reported heroin overdose deaths in West Virginia occurred in 2013 and continues to increase. Heroin-related overdose deaths were second only to 582 oxycodone-related deaths over the last three years (Table 1).

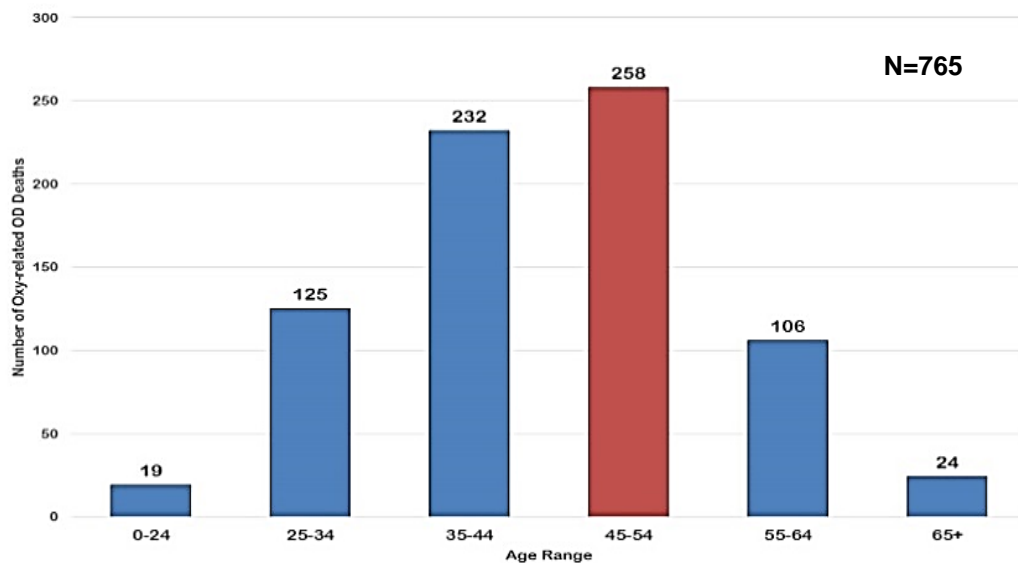
The next three figures compare West Virginia's 2012 through 2015 total of 2,168 opioid-related overdose deaths (Figure 9) with the 590 heroin-related overdose deaths (Figure 10) and 765 oxycodone-related deaths (Figure 11). From 2012 through 2015, most heroin deaths occurred among a younger age range (25-34 with 196 deaths, followed by 35-44 with 174 deaths) than total opioid overdose deaths (35-44 with 611 deaths, followed by 45-54 with 609 deaths) and oxycodone-related overdose deaths among an older age range (45-54 with 258 deaths).

Figure 9: Opioid-Related Overdose Deaths by Age in West Virginia Occurrences, 2012-2015

Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

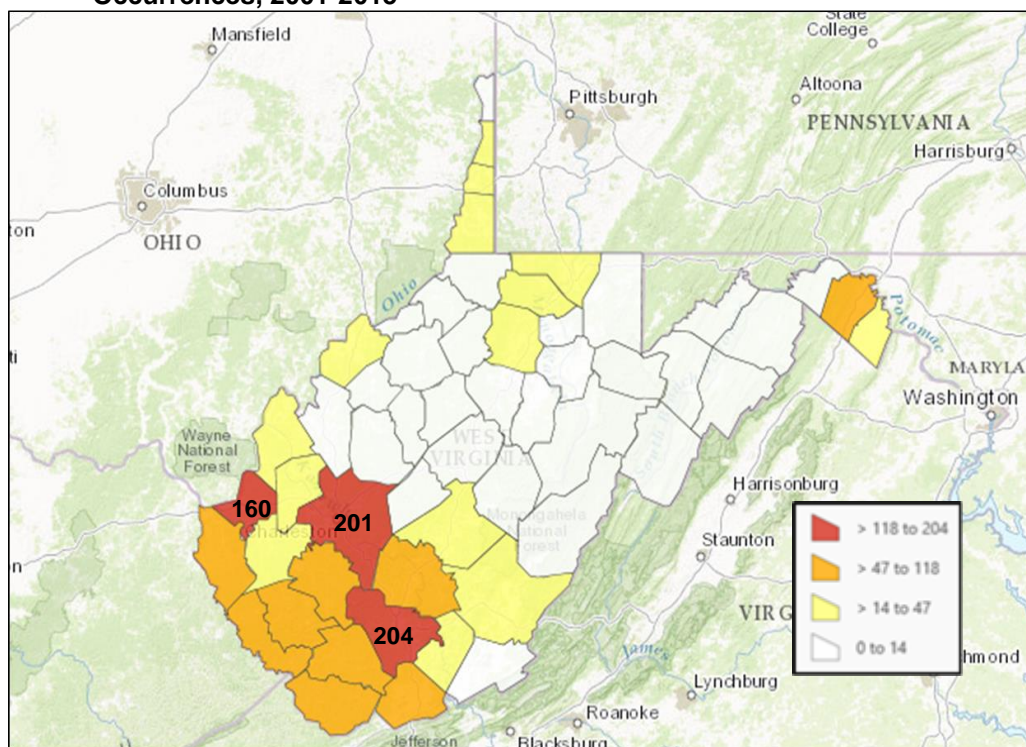
Figure 10: Heroin-Related Overdose Deaths by Age in West Virginia Occurrences, 2012-2015

Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 11: Oxycodone-Related Overdose Deaths by Age in West Virginia Occurrences, 2012-2015

Data Source: WV Health Statistics Center, Vital Statistics System, 2015 Preliminary Data

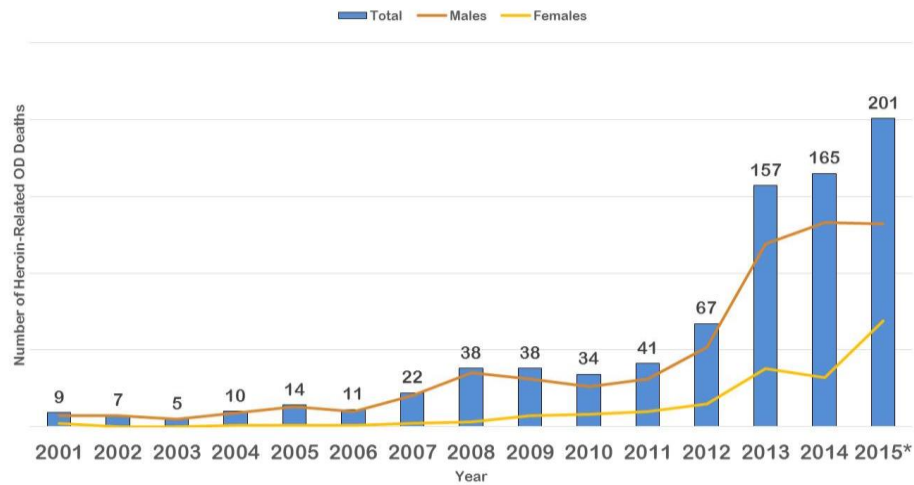
Raleigh, Kanawha, and Cabell counties accounted for 29.4% of reported deaths from oxycodone from 2001 through 2015 (Figure 12).

Figure 12: County-Level Distribution of Oxycodone-Related Overdose Deaths West Virginia Occurrences, 2001-2015

Data Source: WV Health Statistics Center, Vital Statistics System, 2015 Preliminary Data

819 heroin-related deaths were reported over the last 15 years (Figure 13). In more recent years, 2013 through 2015, heroin has become the second leading opioid contributing to 523 overdose deaths.

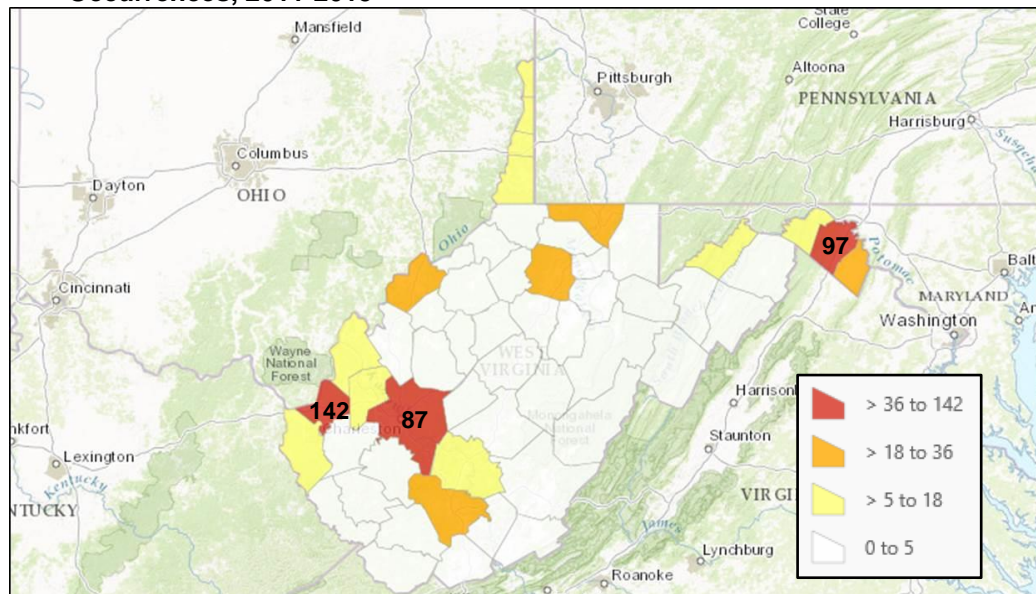
Figure 13: Heroin-Related Overdose Deaths, West Virginia Occurrences, 2001-2015 (N=819)



Data Source: WV Health Statistics Center, Vital Statistics System, 2015 Preliminary Data

631 heroin-related deaths occurred in the last five years from 2011-2015 (Figure 14), which is a 78% increase from the previous years (2001-2010) for these three counties. There were 3.4 times more heroin reported deaths over these five years than the previous ten years. 47% of deaths were reported from Berkeley, Cabell, and Kanawha counties. Cabell County had the highest rate of heroin-related overdose deaths in 2015 at 54.7 deaths per 100,000 people.

Figure 14: County-Level Distribution of Heroin-Related Overdose Death in West Virginia Occurrences, 2011-2015

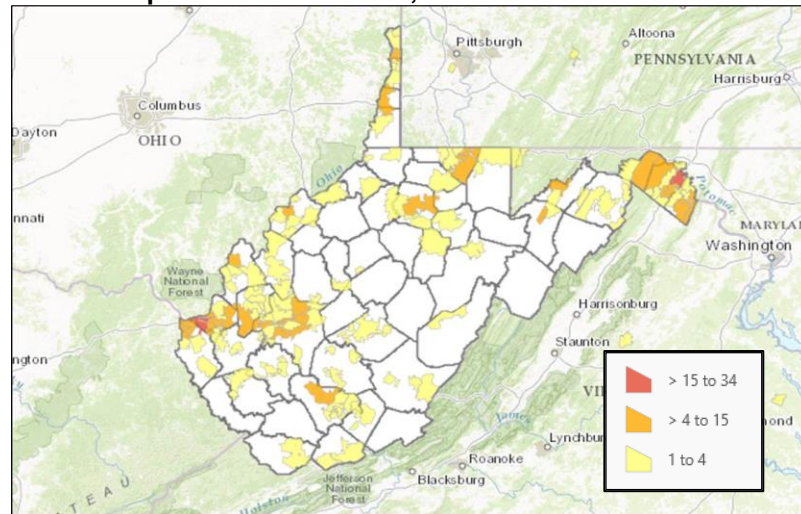


County	2001-2010	2011-2015	Total
Berkeley	35	97	132
Cabell	21	142	163
Kanawha	14	87	101
Three-County Total	70	326	396
Total WV	184	631	819

Data Source: WV Health Statistics Center, Vital Statistics System, 2015 Preliminary Data

Figure 15 displays the heroin-related overdose deaths by zip code. These geographic distributions of data identify the targeted hot spots in red, followed by orange and yellow. This kind of detail by zip code can be used to target community intervention efforts.

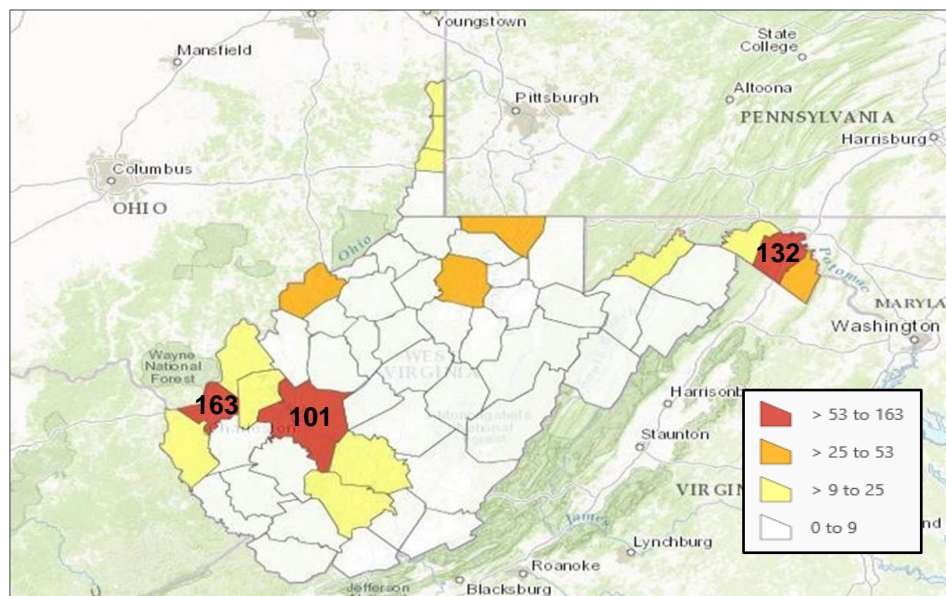
Figure 15: West Virginia Occurrence of Heroin Overdose Deaths by Zip Code of Residence, 2012-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 16 shows the county-level distribution of heroin-related overdose deaths from 2001 through 2015 with Cabell, Berkeley and Kanawha as the counties with the highest frequency of heroin-related overdose deaths.

Figure 16: County-Level Distribution of Heroin-Related Overdose Deaths West Virginia Occurrences, 2001-2015

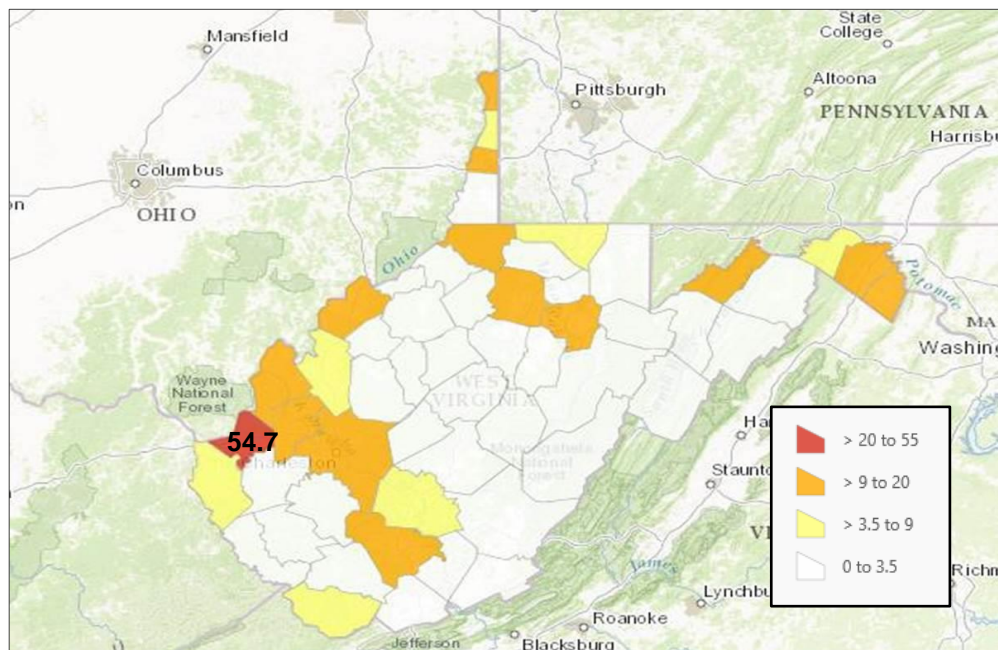


Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Cabell County had the highest death rate of heroin-related overdose deaths in 2015 at 54.7 deaths per 100,000 people (Figure 17). There are several other counties throughout the state with 9 to

20 heroin-related overdose deaths, so as this cause of death continues to occur in multiple counties, the concern statewide increases.

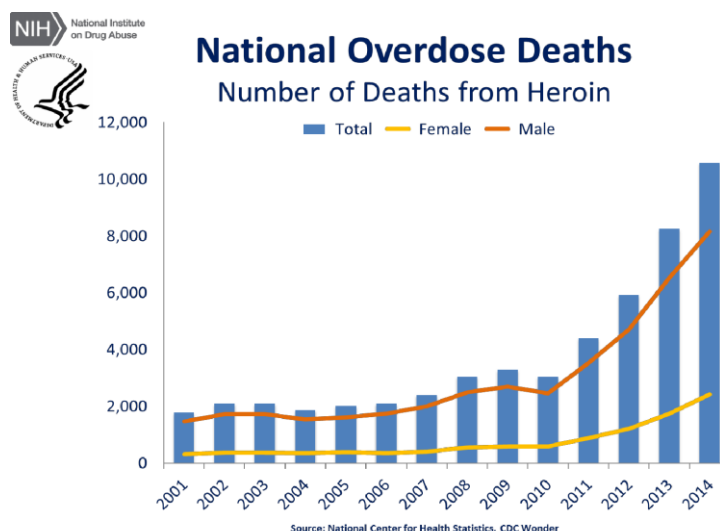
Figure 17: County-Level Heroin-Related Overdose Deaths West Virginia, 2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

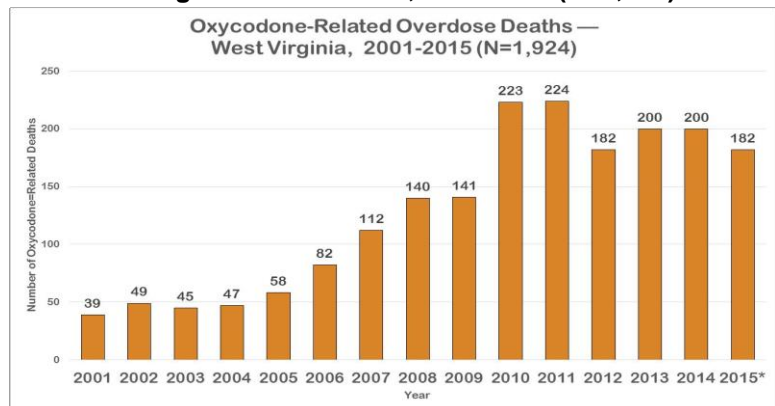
Nationally, a similar spike in documented heroin-related deaths was observed from 2011 through 2014 (Figure 18). Again, as is the case in West Virginia (Figure 13), there were more male heroin overdose deaths than females observed. The increase among males continues to grow since 2010. In 2011, West Virginia had the highest age-adjusted heroin-related death rate in the nation, well over twice the national rate and over a third higher than the next highest state, Kentucky.

Figure 18: U.S. Overdose Deaths from Heroin 2001-2014



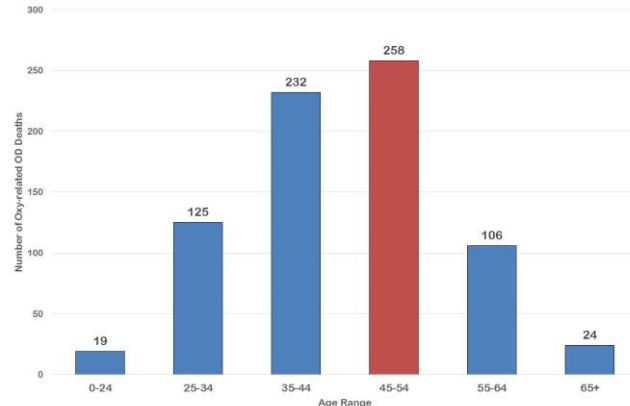
Oxycodone-related overdose deaths in West Virginia (Figure 19) were detected in 1,924 total deaths from 2001 through 2015. In Figure 19, there were two years, 2010 (223) and 2011 (224), that showed the peak for this drug causing overdose deaths in the state. The age range of 45-54 was detected as the peak age range for occurrence of oxycodone-related overdose deaths in 2012 through 2015, an older range than seen for other overdose deaths in this report (Figure 20).

Figure 19: Oxycodone-Related Overdose Deaths West Virginia Occurrences, 2001-2015 (N=1,924)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

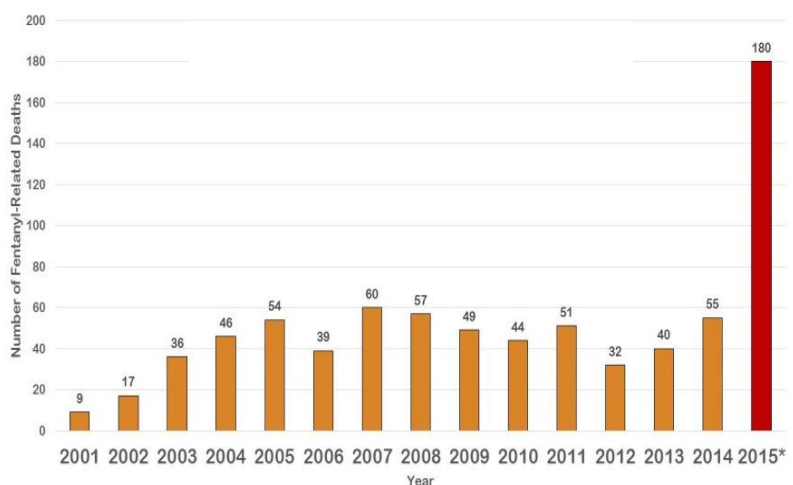
Figure 20: Oxycodone-Related Overdose Deaths by Age in West Virginia Occurrences, 2012-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Another opioid analog, fentanyl, spiked in occurrence during 2015 drug overdose deaths (Figure 21) with 50% of 180 of the 358 deaths reported since 2011. A 227% increase occurred from 2014 (55 deaths) to 2015 (180 provisional death data).

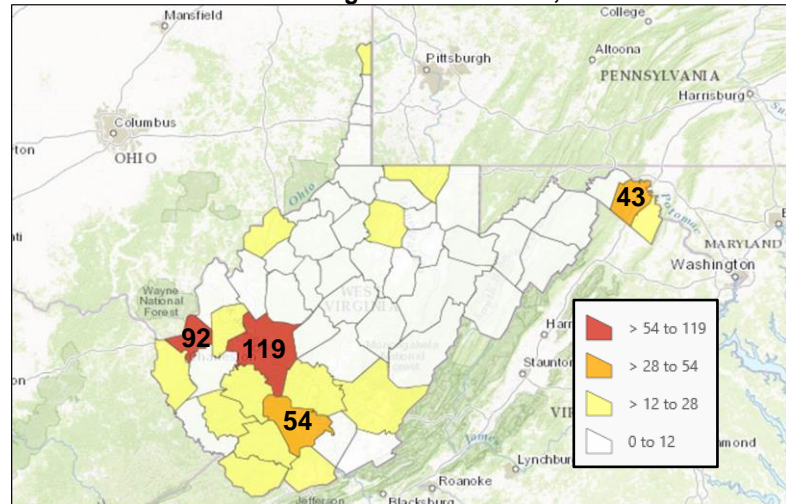
Figure 21: Fentanyl-Related Overdose Deaths West Virginia Occurrences, 2001-2015 (N=769)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

The county-level distribution of fentanyl-related overdose deaths was also reported more in southern West Virginia counties as has become the pattern with much of West Virginia's overdose death epidemic. Both frequency and rates per 100,000 for fentanyl-related deaths were concentrated in the southern counties. 69% of fentanyl-related deaths from 2001 through 2015 were reported from Cabell and Kanawha counties (Figure 22). Raleigh County is not far behind where 54 fentanyl-related overdose deaths were detected.

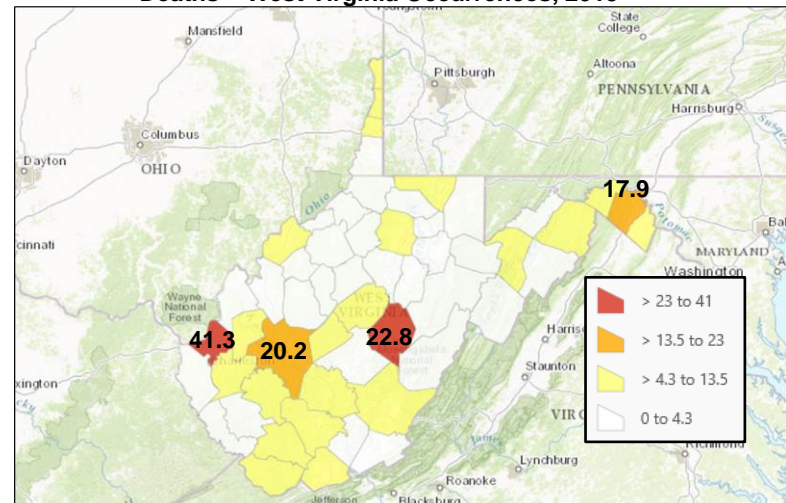
Figure 22: County-Level Distribution of Fentanyl-Related Overdose Deaths – West Virginia Occurrences, 2001-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

In Figure 23, the data show that in 2015 there were 41% of fentanyl-related deaths in Cabell County, followed by 23% in Webster County, 20% in Kanawha County and 18% in Berkeley County.

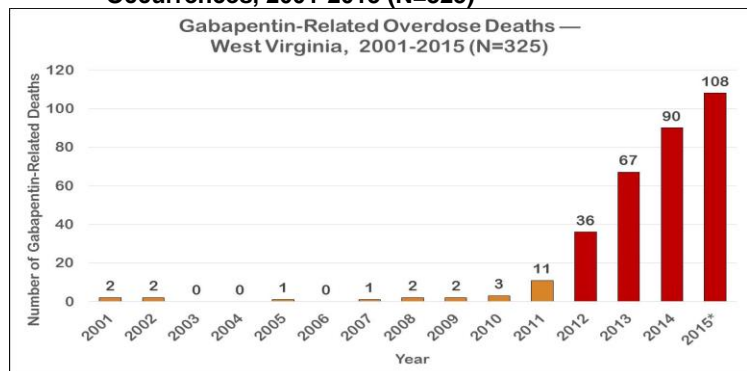
Figure 23: County-Level Incidence of Fentanyl-Related Overdose Deaths – West Virginia Occurrences, 2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Gabapentin is an anticonvulsant drug that has been used in the community of persons who use recreational drugs to potentiate the effects of other recreational drugs. Figure 24 provides this data from 2012 through 2015 indicating the need for attention to the steady increase of gabapentin-related overdose deaths. The last four years account for 93% of the total overdose deaths that detected gabapentin in toxicology results

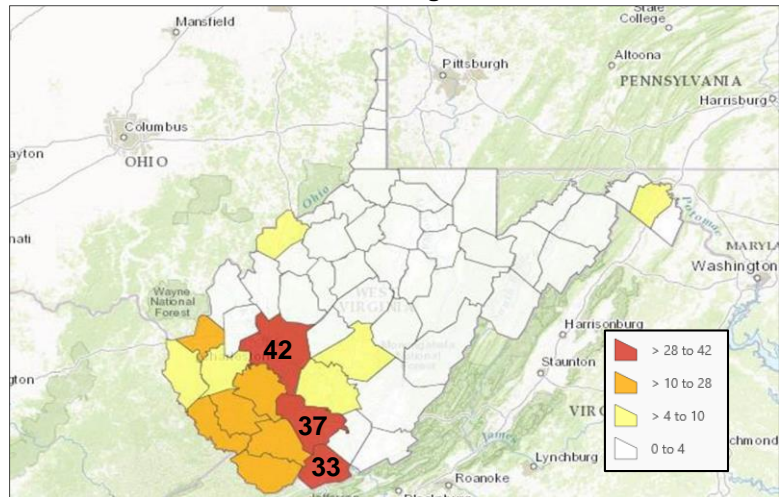
Figure 24: Gabapentin-Related Overdose Deaths West Virginia Occurrences, 2001-2015 (N=325)



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3404313/>

Thirty-five percent (35%) of gabapentin-related deaths from 2001 through 2015 were reported from three counties: Kanawha, Mercer, and Raleigh. Several other southwestern counties are identified in this alarming cluster.

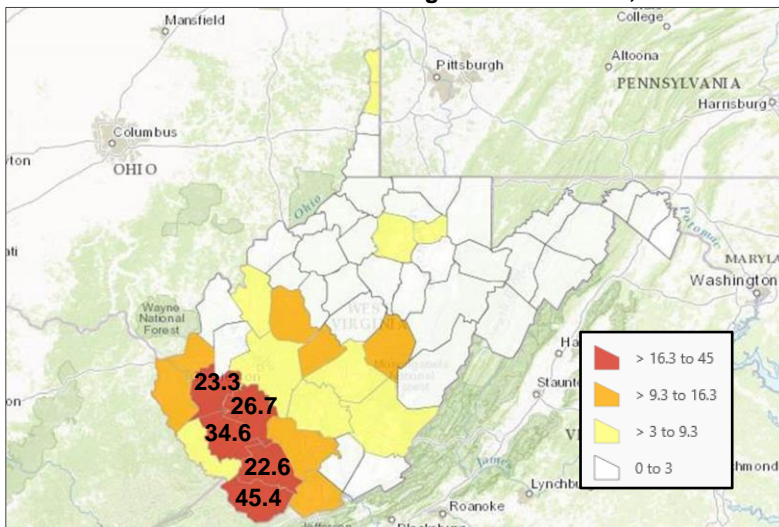
Figure 25: County-Level Distribution of Gabapentin-Related Overdose Deaths West Virginia Occurrences, 2001-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 26 graphs the county incidence rates for gabapentin-related deaths. Lincoln, Boone, Logan, Wyoming and McDowell counties had the highest incidence rates of gabapentin-related deaths in 2015. These incidence rates further target the need for public health intervention in this area of the state.

Figure 26: County-Level Distribution of Gabapentin-Related Overdose Deaths West Virginia Occurrences, 2001-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Table 2 displays the total number of 3,394 benzodiazepines (tranquilizers) by drug type from 2001 through 2015. Alprazolam accounted for 62% of the drug overdose deaths among benzodiazepines averaging about 216 deaths since 2011. Fifty percent (50%) of the three total drugs listed occurred among misuse of alprazolam from 2001 through 2015.

Table 2: Benzodiazepines by Drug Type in West Virginia Occurrences, 2001-2015

Drug	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Alprazolam	30	27	42	56	40	80	155	186	134	175	240	228	200	215	195	2114
Clonazepam	3	8	4	8	14	8	28	24	24	28	51	65	56	69	86	476
Diazepam	41	45	74	81	82	99	149	123	108	105	151	153	117	136	143	1607
At least 1 Benzo	72	73	111	126	124	158	269	279	224	277	357	343	308	343	330	3394

Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

National overdose deaths from benzodiazepines peaked in 2011. After a slight decline in 2012, a new progressive increase from 2012 through 2014 is observed for both males and females in Figure 27.

Figure 27: National Benzodiazepines Overdose Deaths, 2001-2014

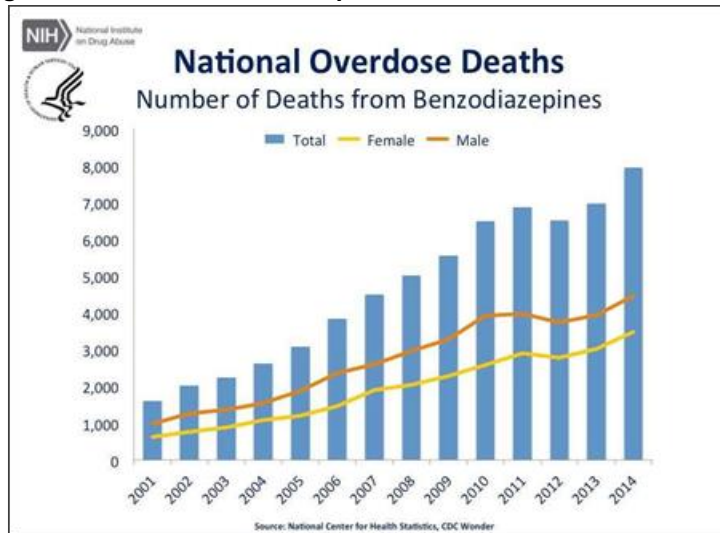
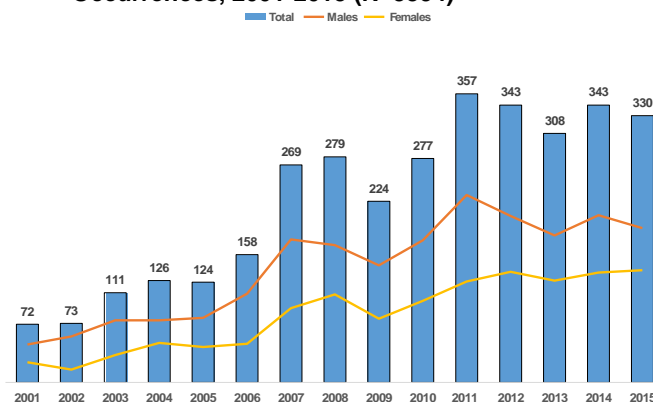


Figure 28 displays the most cases of benzodiazepine-related overdose deaths in 2011 (357) followed by a slight decline to 343 deaths in 2012, then a dip to 308 deaths in 2013. 2014 totals climb back to the level detected in 2012, then again a slight decline in 2014 to 330 deaths.

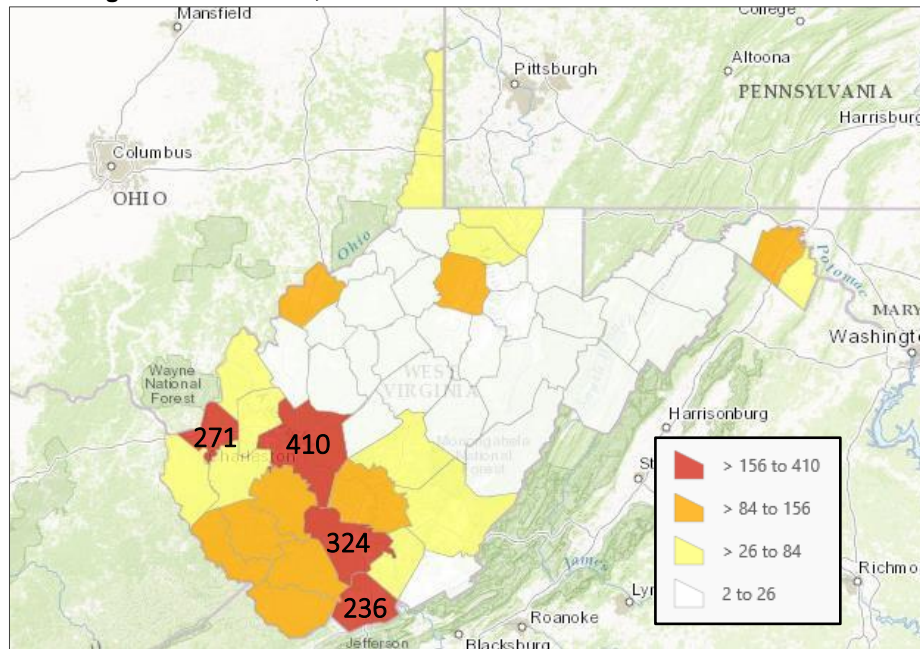
Figure 28: Benzodiazepine-Related Overdose Deaths West Virginia Occurrences, 2001-2015 (N=3394)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Benzodiazepines overdose deaths detected in West Virginia from 2010 through 2015 primarily occurred in Kanawha, Raleigh, Cabell, and Mercer counties (Figure 29). The focus of these overdose deaths was mostly concentrated in the southwestern counties of the state.

**Figure 29: County-Level Distribution of Benzodiazepines-Related Overdose Deaths
West Virginia Occurrences, 2010-2015**



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Another group of drugs that are misused and detected with overdose deaths is called stimulants. This group includes amphetamines, cocaine, and methamphetamine. Table 3 lists a total of 1,257 stimulants detected from toxicology results over the last 15 years in West Virginia. Cocaine was detected in more deaths (1,059) than either amphetamines or methamphetamines from 2001 through 2015.

Table 3: Detected Stimulants in West Virginia Occurrence of Overdose Deaths (2001-2015)

Drug	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Amphetamine	0	2	2	1	4	0	2	1	1	9	9	19	41	38	63	192
Cocaine	23	36	57	70	84	97	91	70	61	73	81	70	89	57	100	1059
Methamphetamine	1	0	0	1	4	2	4	2	3	9	8	11	23	21	49	138
At least 1 Stimulant	24	38	57	71	88	98	96	73	65	90	98	89	122	92	156	1257

Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 30 displays data from 2001 through 2015 with a 69.6% increase of West Virginia stimulant overdose deaths in 2015 from the previous year of 2014. From 2001 through 2006/2007, there was a gradual increase, but since the dip to 73 deaths in 2008 the number of deaths went up and down until 2013 with 122 deaths.

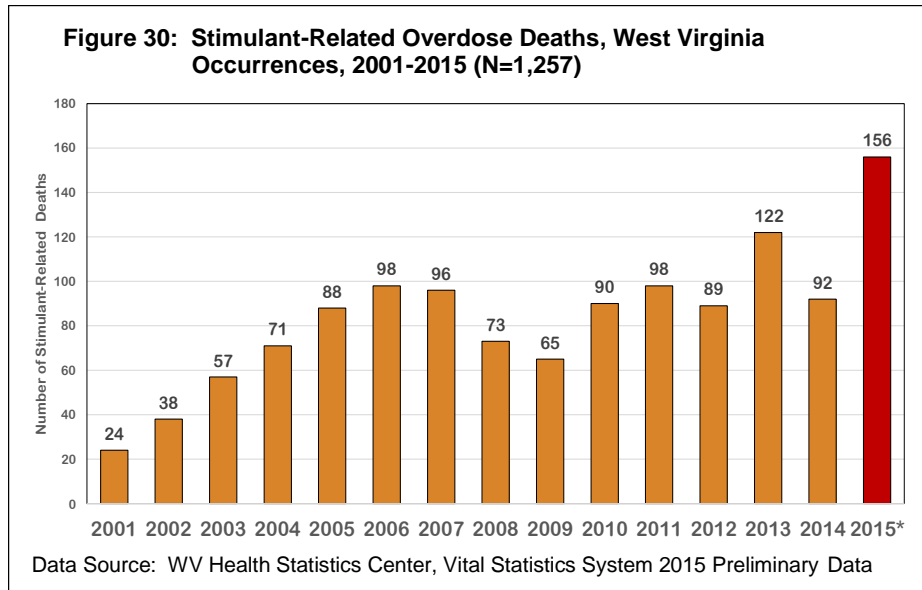
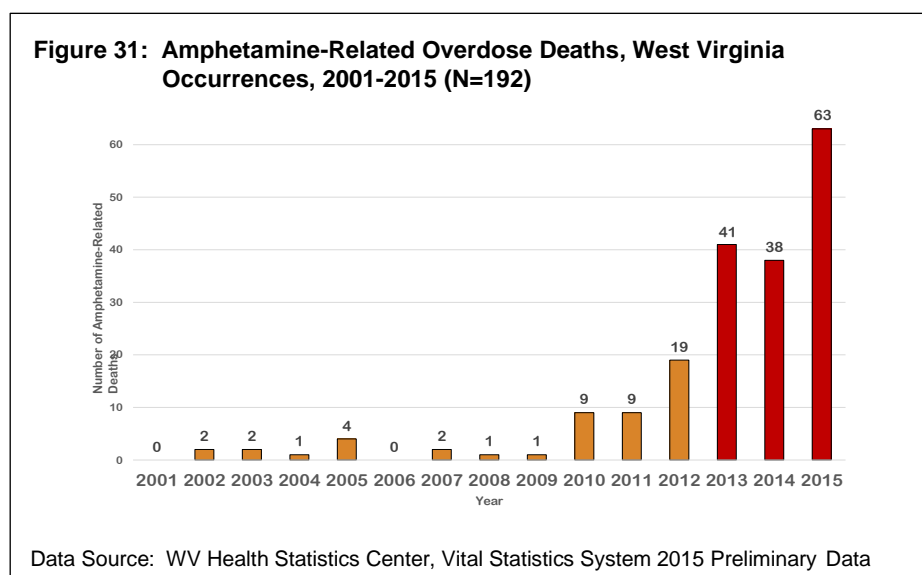
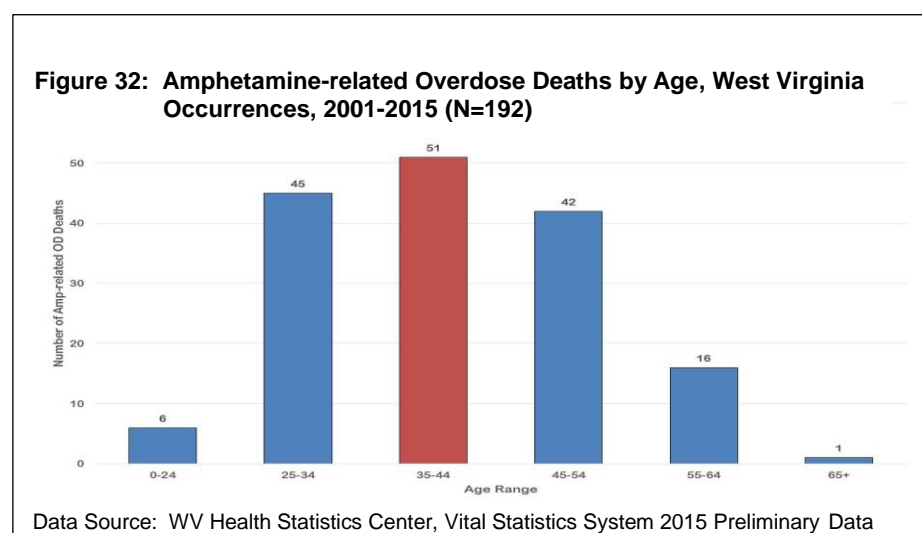


Figure 31 shows that 192 amphetamine-related overdose deaths were detected from 2001 through 2015, with 74% of the overdose deaths occurring in the last three years, 2013-2015.

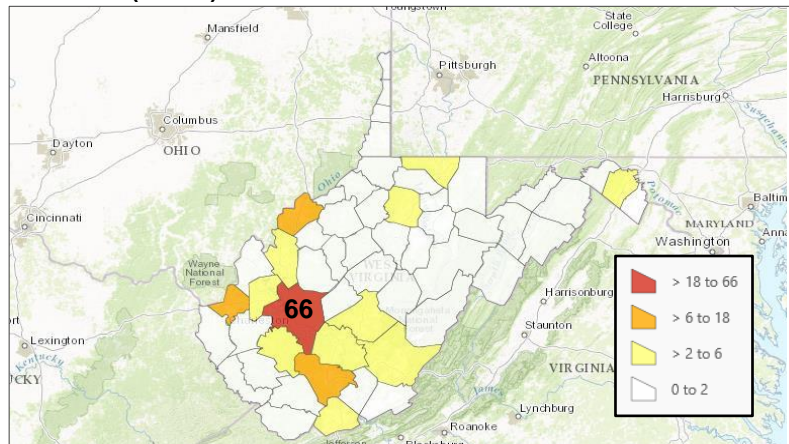


The 35-44 age range (Figure 32) accounted for 51 or 27% of these deaths followed by 45 or 23% among 25-34 year olds. Not far behind were 42 or 22% of overdose deaths due to amphetamines from 2001 through 2015.



Most of amphetamine-related overdose deaths over the last 15 years occurred in Kanawha County (66 of 192 or 34%). Cabell, Wood and Raleigh counties are next with 6 to 18 deaths due to amphetamines (Figure 33).

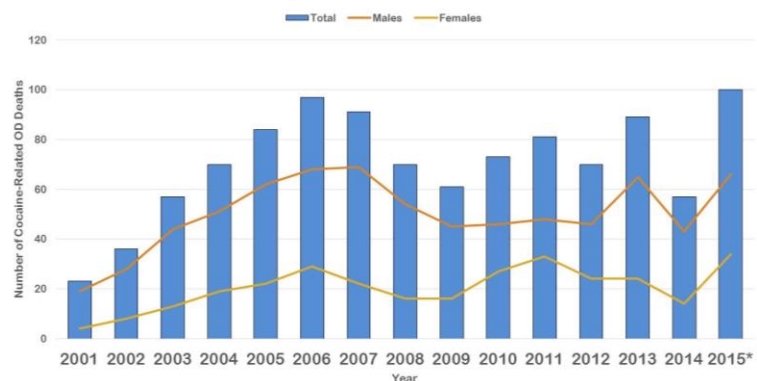
Figure 33: County-Level Distribution of Amphetamine-Related Overdose Deaths, West Virginia Occurrences, 2001-2015 (N=192)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Cocaine was detected in 1,059 overdose deaths over the last 15 years with a peak in occurrence in 2006 and 2015 (Figure 34). From 2014 through 2015 a sharp total increase is observed for both males and females.

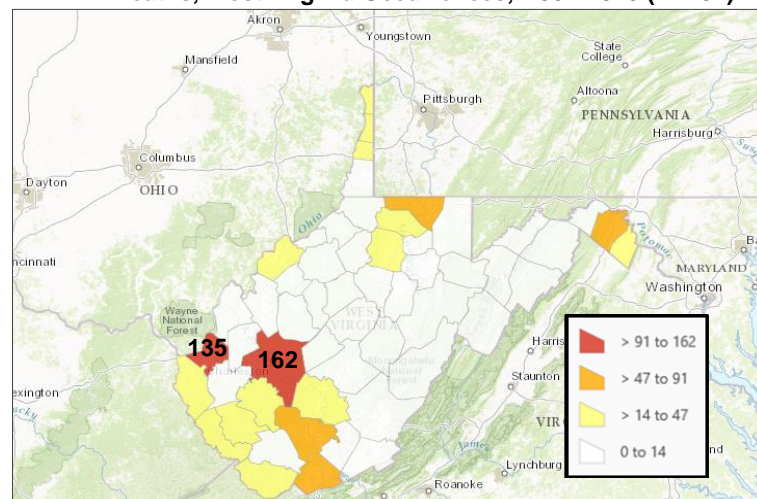
Figure 34: Cocaine-Related Overdose Deaths, West Virginia Occurrences (2001-2015) (N=1,059)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Cocaine-related overdose death rates were mostly detected in Kanawha and Cabell counties (28%) in Figure 35. Other smaller populated counties are detected when figuring rates for these deaths as compared to Figure 33 above.

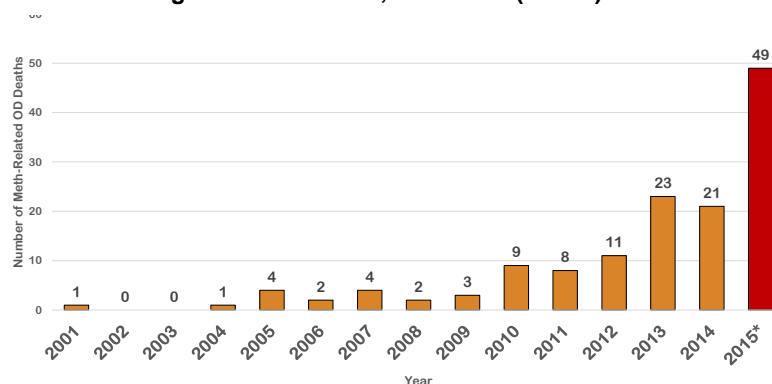
Figure 35: County-Level Distribution of Cocaine-Related Overdose Deaths, West Virginia Occurrences, 2001-2015 (N=192)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

A spike in methamphetamine-related overdose deaths (38%) occurred in 2015 (Figure 36) which is a 133% increase from the previous year.

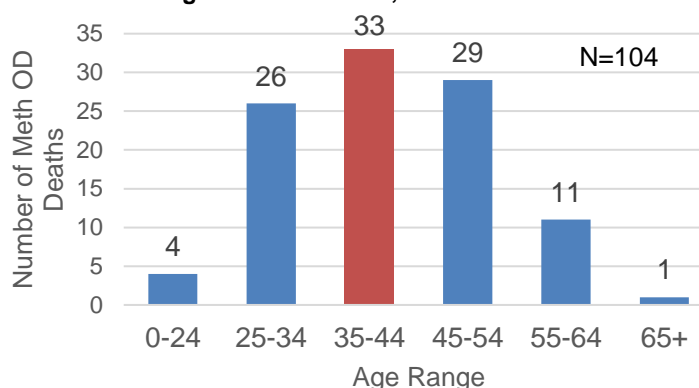
Figure 36: Methamphetamine (Meth)-Related Overdose Deaths, West Virginia Occurrences, 2001-2015 (N=128)



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 37 shows that methamphetamine-related overdose deaths from 2012 through 2015 were mostly detected in the 35-44 age range. Most deaths by age range cluster in the 45-54 and 25-34 ages.

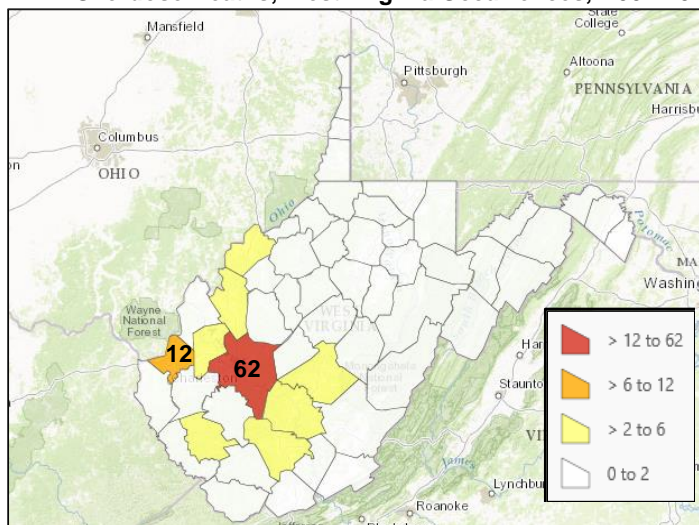
Figure 37: Methamphetamine (Meth)-Related Overdose Deaths by Age West Virginia Occurrences, 2012-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

In Figure 38, Kanawha County had 62 of the 104, or 60% of the methamphetamine-related overdose deaths from 2001 through 2015.

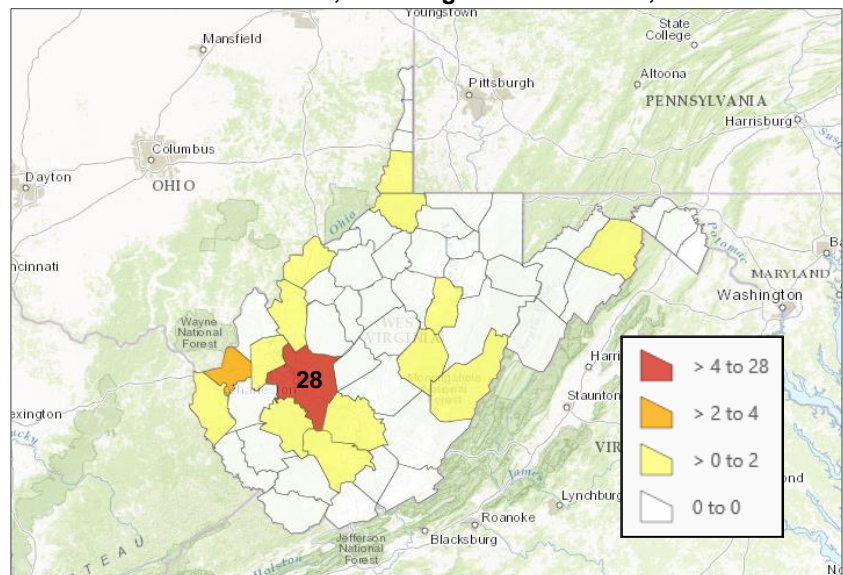
Figure 38: County-Level Distribution of Methamphetamine-Related Overdose Deaths, West Virginia Occurrences, 2001-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 39 shows only 2015 data for methamphetamine-related overdose deaths still occurring primarily in Kanawha County followed by Cabell County.

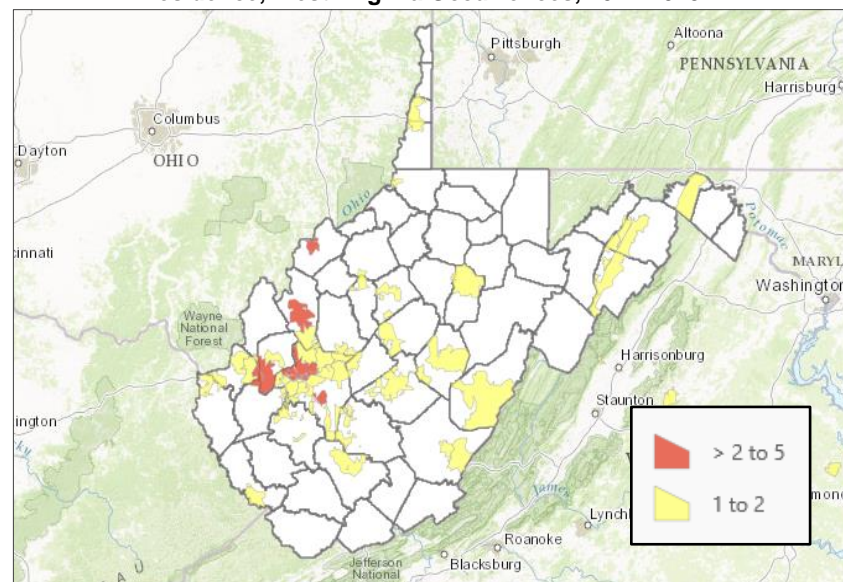
Figure 39: County-level Distribution of Methamphetamine-Related Overdose Deaths, West Virginia Occurrences, 2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Figure 40 geographically displays methamphetamine-related overdose deaths by zip code for 2012 through 2015. Thus, the geographic distributions of data identify the targeted hot spots in red, followed by yellow. These data can be used to target community interventions for drug treatment and prevention efforts.

Figure 40: Methamphetamine-related Overdose Deaths by Zip Code of Residence, West Virginia Occurrences, 2012-2015



Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data

Tables 4 through 7 provide the data for total overdose deaths in 2012 through 2015 by race/ethnicity of the decedent. These overdose deaths among black/non-Hispanics increased 3-4 fold from 2014 to 2015, but the numbers are low for other race/ethnicity combinations (not considering white/non-Hispanic). Thus, there is not much interpretation for race/ethnicity since most overdose deaths whether they are due to opioids, benzodiazepines, or a death tied to one or more opioids or benzodiazepines since the occurrences are mostly among white/non-Hispanic decedents.

Table 4: West Virginia Occurrence Drug Overdose Deaths by Race/Ethnicity of Decedent, 2012-2015

Race/Ethnicity	Year				
	2012	2013	2014	2015	2012-2015
All Races	558	587	629	730	2,504
White/Non-Hispanic	536	555	610	677	2,378
Black/Non-Hispanic	19	26	16	52	113
Other	3	6	3	1	13
Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data					

Table 5: West Virginia Occurrence Drug Overdose Deaths Containing One or More Opioids by Race/Ethnicity of Decedent, 2012-2015

Race/Ethnicity	Year				
	2012	2013	2014	2015	2012-2015
All Races	476	500	554	638	2,168
White/Non-Hispanic	462	476	540	596	2,074
Black/Non-Hispanic	12	19	11	41	83
Other	2	5	3	1	11
Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data					

Table 6: West Virginia Occurrence Drug Overdose Deaths Containing One or More Benzodiazepines by Race/Ethnicity of Decedent, 2012-2015

Race/Ethnicity	Year				
	2012	2013	2014	2015	2012-2015
All Races	343	308	343	330	1,324
White/Non-Hispanic	338	298	339	316	1,291
Black/Non-Hispanic	4	6	4	13	27
Other	1	4	0	1	6
Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data					

Table 7: West Virginia Occurrence Drug Overdose Deaths Containing a Combination of One or More Opioids or One or More Benzodiazepines by Race/Ethnicity of Decedent, 2012-2015

Race/Ethnicity	Year				
	2012	2013	2014	2015	2012-2015
All Races	496	517	577	653	2,243
White/Non-Hispanic	482	493	563	610	2,148
Black/Non-Hispanic	12	18	11	42	83
Other	2	6	3	1	12
Data Source: WV Health Statistics Center, Vital Statistics System 2015 Preliminary Data					

There are more public health issues to address related to the drug overdose problems in West Virginia. The state has also experienced a rise in infectious diseases like hepatitis B and C with reported risk factors related to the increasing use of the illicit drugs listed in this report. For example, in 2015, West Virginia reported 14.7 cases of acute hepatitis B (HBV) per 100,000 population (compared with the United States at <1 per 100,000 population). Many of the HBV cases were from the southern part of the state, between 25-49 years of age, and reported injection drug use, use of street drugs, etc. The acute hepatitis B infections rate has tripled in 6 years (from 4.7 in 2010 to 14.7 in 2015), and consistently the greatest two risk factors are injection drug use and any other drug use. Innovative public health intervention must take place not only to save lives among this at-risk population (with interventions such as naloxone dispensing for reversal of opioid-related overdose), but also to prevent morbidity of infectious disease burden such as with viral hepatitis in the same population. In 2015, there were 3.4 cases of acute hepatitis C (HVC) per 100,000 population in West Virginia (compared with the United States at <1 per 100,000 population). Similar to HBV, many of the HCV cases were from the southern counties in the state, and reported risk factors of injected drugs and street drugs among other risks, plus incarceration. Seventy-five percent (75%) of acute HCV cases reported between 2007 and 2015 were from patients between the ages of 20-39 (www.dide.wv.gov). The HSC reported opioid overdose deaths in 6,001 West Virginia citizens. Just like HBV and HCV, the burden of the county-level distribution of opioid-related overdose deaths lie in the southern part of the state.

What next steps can be taken to make a difference with these troubling problems? Former West Virginia Governor Earl Ray Tomblin announced that West Virginia has developed a plan that coincides with the CDC guidelines for prescribing opioids for chronic pain. The WVDHHR and Public Employees Insurance Agency (PEIA), in partnership with private insurers, pain specialists, pharmacists, and other healthcare providers, developed prior authorization requirements and an opioid treatment plan template for ongoing efforts to curb opioid misuse, overdoses, and deaths. Prior authorization forms were formally adopted January 2017.

"With more than 600 opiate-related deaths in West Virginia last year, we must continue making every positive change we can to break the cycle of addiction. These new guidelines will give physicians and patients the facts they need to make more informed decisions about treatment."

*Earl Ray Tomblin
Former Governor of West Virginia*

The CDC guidelines recommend that opioids should not be considered the first treatment of choice for pain management. The first choice for pain management treatment needs to include education for patients about and agree to all treatment decisions regarding chronic pain. They also recommend that providers consider potential opioid abuse – including diversion of opioid medication when pursuing treatment and take steps to prevent abuse.

To learn more about treatment options, refer to Chapter 4: Early Intervention, Treatment and Management of Substance Use Disorders in the US DHHS, Surgeon General's report, "*Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs and Health*" at <https://addiction.surgeongeneral.gov/> Chapter 4 focuses on a spectrum of effective strategies and services to identify, treat, and manage substance use in mainstream healthcare including evidence-based medications, behavioral therapies, and supportive services.

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